Checking Mountain Soil Moisture Under the Snow, an important factor in snowmelt runoff.

Federal-State Cooperative Snow Surveys and Water Supply Forecasts for ARIZONA

SOIL CONSERVATION SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

Data included in this report were obtained by the agency named above in cooperation with the Federal, State and local organizations listed on the last page of this report.

AS OF

APR. 1, 1956

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY
AND WATER SUPPLY FORECAST REPORTS:

Snow surveys in the West are conducted each year at more than 1200 snow courses. Basin and Province or State snow survey reports summarizing the results of the measurements and forecasts of seasonal runoff and water supply are issued by the Soil Conservation Service, U. S. Department of Agriculture and some of its co-operators; the Water Rights Branch of the British Columbia Department of Lands and Forests; and the California Division of Water Resources.

Copies of the various federal-state cooperative snow survey reports listed below may be secured by writing to:

Head, Water Supply Forecasting Section
Soil Conservation Service
209 S. W. 5th Avenue
Portland 4, Oregon

BASIN REPORTS:

Colorado, Rio Grande, and Platte-Arkansas River Basins	Issued monthly February through May by SCS and Colorado Experiment Station, Fort Collins, Colorado.*
Columbia River Basin	Issued monthly January through May by Soil Conservation Service, Boise, Idaho.*
Upper Missouri River Basin	Issued monthly February through May by SCS and Montana Agricultural Experiment Station, Bozeman, Montana.*
West-Wide Water Supply Outlook	Issued April 1 by Soil Conservation Service and Cooperators, Portland, Oregon.

STATE REPORTS:

Arizona	Issued semi-monthly January 15 through April 1 by SCS and Salt River Valley Water Users Association, Phoenix, Arizona.*
Nevada	Issued monthly February through April by SCS and Nevada State Engineer, Reno, Nevada.*
Oregon	Issued monthly January through May by SCS, Portland, Oregon, and Oregon Agricultural Experiment Station.*
Utah	Issued monthly January through May by SCS, Salt Lake City, Utah, and State Engineer of Utah and Utah Agricultural Experiment Station.*
Washington	Issued monthly February through May by SCS, Spokane, Washington, and State Department of Conservation and Development.*
Wyoming	Issued monthly February through May by SCS, Casper, Wyoming, and State Engineer of Wyoming.*

*Special reports are issued as needed.

The British Columbia reports are issued February 1 through June 1 and may be secured from Comptroller, Water Rights Branch, Department of Lands and Forests, Parliament Buildings, Victoria, B.C.

The California reports are issued monthly February 1 through May 1 and may be secured from Division of Water Resources, California Department of Public Works, Sacramento, California.

The annual water supply forecasts of the Weather Bureau are available in monthly bulletins published from January through May. These bulletins entitled, "Water Supply Forecasts for the Western United States" may be obtained from River Forecast Center, Weather Bureau, 712 Federal Office Building, Kansas City 6, Missouri.

COOPERATIVE SNOW SURVEYS and WATER SUPPLY FORECASTS

for

A R I Z O N A

(Salt, Verde, Gila and part of Lower Colorado River Basin)

Issued

April 1, 1956

Report Prepared

by

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Issued by

Salt River Valley Water Users' Association

and

Soil Conservation Service

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LEGEND

DRAINAGE BASIN BOUNDARY

13U2 ● SNOW COURSE

ARIZONA
COOPERATIVE SNOW SURVEYS

SNOW COURSES AND DRAINAGE BASINS
JANUARY 1956

0 40 80 120 160 200

SCALE IN MILES

INDEX TO SNOW COURSES

NUMBER*	NAME	SEC	TWP	RGE**	ELEVATION	RIVER BASIN
11-P -3	Antelope Park	29	19N	8E	7300	Verde # ..... Discontinued
9-S -1	Baldy (p)	28	7N	27E	9000	Salt-Little Colorado
10-T -1	Bear Wallow	6	12S	16E	8100	Gila
9-S -6	Beaver Head	13	4N	30E	8000	Salt-Frisco
9-S -3	Big Lake Knoll	2	5N	28E	8800	Salt-Frisco-Little Colorado .. Discontinued
7-S -3	Black Canyon	8	13S	11W***	6790	Gila
12-N-1	Bright Angel	34	33N	3E	8400	Lower Colorado
12-R -1	Camp Wood	3	16N	6W	5700	Williams-Verde
10-R -3	Canyon Creek (s)	18	11N	15E	7500	Salt
11-R -2	Casner Park (s)	19	18N	8E	6950	Verde
12-P -1	Chalender (s)	27	22N	3E	7100	Verde
8-S -3	Corner Mountain	7	10S	17W***	8850	Gila-Frisco
9-S -9	Corn Creek (p) Lat. 33°45'N. Long. 109°45'W. §				7730	Salt
9-S -7	Coronado Trail	26	5N	30E	8000	Salt-Frisco
10-R -2	Elk	31	11N	14E	7600	Salt-Little Colorado ..... Discontinued
10-R -6	Forest Dale (s)	2	9N	21E	6000	Salt-Little Colorado
11-P -2	Fort Valley	22	22N	6E	7350	Verde #
9-R -5	Ft. Apache	18	7N	27E	9160	Salt-Little Colorado
8-S -1	Frisco Divide	31	6S	20W***	8000	Frisco-Gila
12-R -4	Gaddes Canyon	11	15N	2E	7600	Verde #
10-R -5	Gentry	36	11N	15E	7600	Salt-Little Colorado
11-P -1	Grand Canyon	21	30N	4E	7500	Lower Colorado
11-R -5	Happy Jack	30	17N	9E	7630	Verde
10-R -4	Heber (p)	28	11N	15E	7600	Salt-Little Colorado
7-S -2	Inman	6	11S	10W***	7800	Gila
12-R -2	Iron Springs	22	14N	3W	6200	Williams-Verde
9-S -2	Maverick Fork (s)(p)	13	6N	27E	9050	Salt-Little Colorado
9-R -4	McKay Peak	13	7N	24E	8250	Salt ..... Not read
9-R -2	McNary (s)	14	8N	23E	7200	Salt-Little Colorado
9-R -1	Milk Ranch	28	8N	23E	7000	Salt
12-R -3	Mingus Mountain	3	15N	2E	7100	Verde #
8-S -2	Mogollon	2	11S	19W***	7000	Frisco-Gila
11-R -4	Mormon Lake	13	18N	8E	7350	Verde #
11-R -3	Mormon Mountain(s)	14	18N	8E	7500	Verde
11-R -1	Munds Park (s)	7	18N	7E	6500	Verde
8-S -4	N-Bar Lake	16	10S	17W***	8600	Gila
8-S -5	Negrito	6	10S	16W***	8200	Gila
9-S -4	Nutrioso	23	6N	30E	8500	Salt-Frisco-Little Colorado
9-S -5	Pacheta	§ At town of Maverick, Ariz.			7800	Salt
9-N-1	Roof Butte	15	8N	6W****	8500	Little Colorado # ..... Not read
10-T -2	Rose Canyon	15	12S	16E	7300	Gila
9-S -8	State Line	6	6S	21W***	8000	Gila-Frisco
7-S -1	Taylor Creek	20	10S	10W***	7850	Gila
9-R -3	Trout Creek	5	7N	24E	6400	Salt ..... Not read
8-N-1	Washington Pass Lat. 36°05'N. Long. 108°50'W. §				8600	Little Colorado # ..... Not read
13-P -1	Willow Ranch	16	21N	11W	5000	Williams
10-R -1	Woods Canyon	15	11N	13E	7640	Salt-Little Colorado ..... Discontinued
10-S -1	Workman Creek	33	6N	14E	6900	Salt

* Number indicates location of course within coordinate rectangle, thus 9-N 1 is Course #1 in coordinate rectangle 9-N.

** All in Gila and Salt River Base and Meridian except where otherwise indicated.

*** New Mexico Principal Meridian.

**** Navajo Base.

On adjacent drainage.

(s) Soil Moisture Station installed on or in vicinity of course.

§ Unsurveyed.

(p) Storage gage installed on or in vicinity of course

M 178 A

ARIZONA WATER SUPPLY OUTLOOK

April 1, 1956

* *
* The water supply outlook has continued *
* to worsen. Snow cover is practically *
* all gone. Stream flow forecasts have *
* again been revised downward. *
* *

GENERAL

This is the fourth year in a row of seriously deficient snow pack and constitutes an almost unprecedented situation. It is not until one goes back to the great drought years of 1898-1904 that one finds a more prolonged period of below average snow pack and runoff. The central Arizona water supplies have not yet been seriously affected, principally due to a series of fortuitous events that can hardly be expected to repeat themselves. The extraordinary storms of late March 1954 occurred at a very favorable time to produce quick runoff and ranked among the largest that have occurred during that season since the start of the century. They furnished enough runoff to build up supplies to carry over to 1955. The most unusual summer storms of 1955 contributed important amounts of water to the reservoir systems and also permitted carry over into the current year.

The 1956 season started off very unfavorably, with no snow on the watersheds through most of January. Heavy storms in the last part of that month, however, brought the situation up to almost normal and had average weather conditions prevailed thereafter we would now be expecting near normal runoff. The almost complete absence of subsequent snow-producing storms, coupled with climatological conditions not favorable to inducing maximum runoff, has instead resulted in the present situation where runoff from snow melt is expected to be among the lowest of all years of record.

The January 15, 1956, Snow Survey report contained the warning that surface water supplies might be seriously deficient this year, requiring continued heavy withdrawals of ground water and also careful planning to obtain the best usage of the limited gravity water supplies. This might include the use of special water conservation measures and in some locations changes in cropping plans or reduction of acreages. That warning bears repeating and emphasizing now that we have had a look at the full snow-accumulation season and are in a position to assess rather completely the situation that faces the water users.

With the carryover storage that is available in the central Arizona reservoirs, there should be adequate water supplies through this season for the Salt River Valley area. However, with normal weather from here on, we can anticipate only very limited quantities of carryover water for next season, and should the current drought conditions persist it is probable that very serious shortages of water will face all of central Arizona next year. Current and prospective water supplies on the San Carlos Project are much less than in the Salt River area, and it appears that no relif is yet in sight for the very serious water shortages that have existed on that project for the past several years.

The only bright spot in the overall picture is for those areas that draw their water supplies directly from the Colorado River. Flow in the Colorado River is expected to be slightly above normal, but even with below-normal flow the large storage capacity available on this river would have insured ample water supplies for all those projects directly dependent upon it for their water supplies.

Earlier forecasts of 1956 snow melt runoff have been based on forecast equations developed from statistical relationships between snow water content, antecedent precipitation and other factors. However, present conditions are such as to be below the base of the plotted curves of the runoff forecast equations. Present forecasts, with the exception of the Little Colorado River, are based on actual depletion hydrographs of the various rivers as they have developed in previous years of similar flow conditions. Relative accuracy of forecasts may be reduced somewhat on this account. However, at the stages that are being forecast the percentage of error is of little importance; even if the error should be 50% or greater, the total variation in water supply will not amount to many acre feet, and the indication by the forecasts of extremely deficient water supplies will remain valid.

The summary of snow course averages by basins, detailed elsewhere in this report, gives only the summaries of the reports from the various snow courses and does not necessarily indicate the relative amount or condition of snow remaining in the higher or more protected locations within the various watersheds.

This is the final Arizona Snow Survey Bulletin for this year.

SNOW COVER AND WATERSHED CONDITIONS

Verde River Basin

This basin is almost totally bare of snow. Only a few drift remnants remain. The storm of April 1 and 2 did not result in any improvement in the water supply outlook on this river. Present indications are that the Verde River is now on the depletion side of the runoff hydrograph and that there will be no increases in rate of runoff due to snow melt water.

Soil moisture conditions vary considerably over the watershed of the Verde. Generally along the high area on the east side of the watershed and above the Rim, soil moisture is good to excellent. Water from the April 1 storm was very beneficial in that it replenished soil moisture previously depleted by evaporation and transpiration, and assured excellent growing conditions for spring grasses.

The lower areas of this watershed, however, are becoming very dry. Some improvement was made by the April 1 storm, but not near to the extent that was experienced in the Mormon Mountain and adjacent areas above the Rim. In some locations, particularly the area generally represented by the Chalender soil-moisture station, measurements indicate that dry soil conditions may become quite severe as the season advances. Loss of soil moisture to evaporation and early season transpiration will pull the moisture content down to a point where, unless early rains occur, fire danger conditions may become quite critical.

Stream flow in the Verde has remained constant at about 200 second feet for the entire month of March. There is no reason to expect increased rates of flow from snow water supplies. Average April 1 reservoir storage on the Verde has been approximately 107,000 acre feet, while average Verde River runoff for the period 1938-52 was approximately 78,000 acre feet, for a total water supply of approximately 185,000 acre feet. April 1 storage this year is near 70,000 acre feet and runoff is forecast at 60,000 acre feet, for a total of 130,000 acre feet or 70% of average.

Storage in both Lake Mary and Mormon Lake is very low. There is no expectation that either lake will gain in storage from this year's snow pack. The City of Flagstaff will be relying heavily on its mountain springs and on the new Woody Mountain well field for city water supplies normally available from Lake Mary.

Salt and Tonto River Basins

Only very limited snow cover remains on this basin, chiefly in protected areas and where extensive drifting occurred. The storm of April 1 and 2 did not add significant amounts of snow or

water to the watershed but was very beneficial in that it replaced soil moisture that had been lost to evaporation, insuring good early season conditions and contributing to prolongation of stream flow in the area. Snow resulting from this storm covered the area generally from below the 6,000 foot contour, and amounted to as much as 8 to 10 inches in the higher elevations. It was quite light and uncohesive and drifted extensively. Moisture content was high, ranging around 25% density. This snow melted rapidly and left the ground surface well saturated, with pools of water standing throughout the area.

Soil moisture measurements indicate that the soil moisture conditions are excellent throughout the higher part of the drainage basin. The readings taken at the McNary soil moisture station are the highest since the station was installed. At every station the soil is saturated to or above its field holding capacity for the full depth measured.

Streams are flowing throughout the area, but at low stages. There is no muddy or roiled water. With the high moisture content of the soils, it is probable that the present low flows will be sustained. Fishing prospects are good.

Runoff rates have been very low. The Salt River reached a stage of 1100 c.f.s., which may well be the snow season maximum, on March 28. Below-freezing nighttime temperatures have retarded runoff rates, and if they continue we cannot expect any increase in stream flow. The Tonto peaked at only approximately 140 c.f.s. in February and has not been above 62 c.f.s. for the entire month of March.

Melting of most of the snow pack has opened many roads throughout the White Mountain area, though some are still very muddy and hazardous and others are blocked by drift remnants.

Average April 1 reservoir storage on the Salt River for the years 1938-52 was approximately 800,000 acre feet. Average Salt and Tonto river April-May runoff for the same period was approximately 187,000 acre feet, giving an average water supply outlook of approximately 987,000 acre feet. Reservoir storage this year is approximately 582,000 acre feet, and forecast runoff is 62,500 acre feet, for a total of approximately 645,000 acre feet, or 66% of the 1938-52 average.

Little Colorado River Basin

Conditions on the White Mountain portion of the Little Colorado River drainage area are much the same as reported for the Salt River.

Current stream flow records on the Little Colorado River above Lyman Dam are not available, hence stream flow forecasts have not

been revised from the original forecast made in the February 1 Snow Survey Bulletin.

Show Low Lake is at a very low stage. There is no expectation of additional inflow of snow water to this reservoir. The present water surface is barely above the bottom of the inlet to the pump tower and it appears that little water will be available for pumping except as rainstorms may contribute to the reservoir.

Soil moisture conditions along the Mogollon Rim portion of the Little Colorado drainage basin are excellent. Earlier losses of soil moisture to evaporation and transpiration were replaced by the storm of April 1 and 2, and it can be expected that spring grasses will make an excellent growth throughout this area.

Clear Creek, Chevalon Creek and other major tributaries should produce larger and more dependable water supplies this year than for the past several years.

Gila and San Francisco River Basins

Snow cover has disappeared from almost all of this basin. The storm of April 1 and 2 produced considerable snow over much of the basin, but melted and disappeared completely within two or three days. The additional moisture from this snow went into the ground and will help to make good spring forage but will not add much to the prospective water supplies.

Water supply forecasts on both the Gila and San Francisco Rivers have been reduced sharply and are now for flows of only between 10% and 15% of the 1938-52 average. Present storage in San Carlos Reservoir is only about 26% of the 1938-52 average.

STREAM FLOW FORECASTS - APRIL 1, 1956

The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature during the forecast period will be near average. Appreciable deviations from normal of temperature and/or precipitation during the forecast period will correspondingly modify these forecasts.

BASIN, STREAM AND STATION	SEASONAL STREAM FLOW IN THOUSANDS OF ACRE FEET FORECAST PERIOD APRIL - MAY, INCLUSIVE					
	Forecast Runoff 1956	Percent 15-Year Average	1955	1954	1953	15-Year Average 1938-52
Salt River at Intake	60.	34	22.1	80.6	57.1	173.9
Tonto River above Roosevelt 1/	2.5	18	1.2	4.9	3.7	13.9
Verde River above Horseshoe	20.	26	19.0	44.9	20.4	77.7
Gila River at Virden	2.5	11	3.2	7.4	6.8	22.3
Frisco River at Clifton	3.5	15	3.9	6.5	6.7	23.6
Little Colorado River above Lyman Dam 1/2/	4.	44	0.3	1.7	2.1	9.1

1/ Average is for less than 15 years in the 1938-52 period.

2/ Forecast period for Little Colorado River above Lyman Dam is for February-June, Inclusive.

STATUS OF RESERVOIR STORAGE - APRIL 1, 1956

BASIN and STREAM	RESERVOIR	USABLE CAPACITY 1000s AF	USABLE STORAGE - 1000 ACRE FEET 1956	1955	1954	15-Year Average 1938-52
Agua Fria	Lake Pleasant 1/	163.8	27.4	22.9	45.7	33.9
Colorado	Lake Havasu 1/	688.0	616.0	672.6	623.8	578.3
Colorado	Lake Mohave 1/	1,810.0	1,718.0	1,755.3	1,784.0	1,113.9
Colorado	Lake Mead	27,207.0	10,720.0	11,558.0	15,689.0	18,493.0
Gila	San Carlos	1,205.0	54.0	20.4	40.0	205.9
Verde	Bartlett 1/	180.0	67.0	55.0	84.7	75.9
Verde	Horseshoe 1/	143.0	2.4	1.3	76.5	31.3
Salt	Roosevelt	1,381.6	229.0	341.5	693.5	516.9
Salt	Apache	245.1	231.0	241.2	244.8	194.5
Salt	Canyon	57.8	56.0	56.3	57.5	43.7
Salt	Saguaro	69.8	66.0	68.6	58.6	43.5
Little Colorado	Lyman 1/	30.6	8.8	1.9	0.9	9.3
Little Colorado	Show Low Lake 1/	5.1	0.5	0.2	4.1	--

1/ Average is for less than 15 years of record in the 1938-52 period.

SUMMARY OF APRIL 1 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHED

WATERSHEDS	No. of Courses in Average	Snow Depth 1956 Inches	Snow Water Content in Inches				Snow Density 1956	1956 Water Content in	
			1956	1955	1954	1938-52 Average	Percent	Percent of 1955	Avg.
Gila River	7	0	0.0	0.1	0.0	0.6	---	---	---
Salt River	11	1	0.2	0.4	1.9	2.5	20	50	80
Verde River	6	0	0.0	0.0	2.0	4.0	---	---	---
Williams River	2	0	0.0	0.0	0.0	0.0	---	---	---
Lower Colorado River	4	3	0.7	1.7	3.6	3.9	23	41	18
Little Colorado River	8	1	0.3	0.6	3.1	4.2	30	50	7

Note: Figures given are snow course averages and do not necessarily represent distribution of snow over watershed.

ARIZONA SNOW SURVEYS - APRIL 1, 1956

DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENTS 1956 Date of Survey	Snow Depth (In.)	Water Content (In.)	PAST RECORD Water Content (In.) 1955	1954	1938-52 Average	Previous Yrs. of Record
GILA RIVER									
Nutrioso	9-S-4	8500	3/30	0	0.0	0.3	0.0	0.6	18
Bear Wallow 2/3/	10-T-1	8100	3/30	0	0.0	0.0	0.0	2.2	8
Frisco Divide	8-S-1	8000	3/30	0	0.0	0.0	0.0	0.6	18
State Line	9-S-8	8000	3/30	0	0.0	0.0	0.0	0.6	18
Coronado Trail	9-S-7	8000	3/30	0	0.0	0.0	0.0	1.5	18
Beaver Head	9-S-6	8000	3/30	0	0.0	0.0	0.0	1.0	18
Taylor Creek 2/	7-S-1	7850	3/31	0	0.0	0.0	0.0	0.1	14
Inman 2/	7-S-2	7800	3/31	0	0.0	0.0	0.0	0.1	10
Rose Canyon 2/3/	10-T-2	7300	3/30	0	0.0	0.0	0.0	0.7	8
Mogollon 2/3/	8-S-2	7000	4/2	6	1.6	0.0	0.0	-	3
Black Canyon 2/3/	7-S-3	6790	3/30	0	0.0	0.0	0.0	-	3
SALT RIVER									
Ft. Apache 1/2/	9-R-5	9160	4/5	7	2.3	4.3	7.4	6.7	6
Baldy 1/2/	9-S-1	9125	4/5	0	0.0	0.0	5.1	4.9	6
Maverick Fork 2/	9-S-2	9020	4/5	T	T	T	7.5	1.5	6
Nutrioso	9-S-4	8500	3/30	0	0.0	0.3	0.0	0.6	18
Coronado Trail	9-S-7	8000	3/30	0	0.0	0.0	0.0	1.5	18
Beaver Head	9-S-6	8000	3/30	0	0.0	0.0	0.0	1.0	18
Pacheta 2/	9-S-5	7800	3/30	0	0.0	0.0	0.0	4.9	4
Gentry 2/3/	10-R-5	7600	4/3	3	0.4	0.0	0.0	-	3
Heber 2/3/	10-R-4	7600	4/3	4	0.6	0.0	1.2	-	3
Canyon Creek 2/3/	10-R-3	7500	4/3	5	0.9	0.0	2.3	-	3
McNary 2/	9-R-2	7200	3/30	0	0.0	0.0	0.0	0.2	17
Milk Ranch 2/	9-R-1	7000	3/30	0	0.0	0.0	0.0	0.0	15
Workman Creek 2/	10-S-1	6900	3/27	0	0.0	0.0	1.2	5.9	4
Forest Dale 2/	10-R-6	6430	3/30	0	0.0	0.0	0.0	0.0	17
VERDE RIVER									
Happy Jack 2/3/	11-R-5	7630	Report Delayed			0.0	2.4	3.4	4
Gaddes Canyon 2/3/	12-R-4	7600	Report Delayed			T	4.1	-	2
Mormon Mountain 2/	11-R-3	7500	4/4	T	T	0.0	6.0	11.1	4
Mormon Lake 1/2/	11-R-4	7350	4/4	0	0.0	0.0	3.9	8.4	9
Fort Valley 1/2/	11-P-2	7350	3/30	0	0.0	0.0	2.1	1.9	9
Mingus Mountain 2/3/	12-R-3	7100	Report Delayed			0.0	0.0	0.0	9
Chalender 2/	12-P-1	7100	3/31	0	0.0	0.0	0.3	2.8	9
Casner Park 2/3/	11-R-2	6930	4/4	T	T	0.0	0.0	-	3
Munds Park 2/3/	11-R-1	6500	4/4	0	0.0	0.0	1.5	-	3
Iron Springs 1/2/	12-R-2	6200	3/30	0	0.0	0.0	0.0	0.0	10
Camp Wood 2/	12-R-1	5700	4/1	0	0.0	0.0	0.0	0.0	10

1/ On adjacent drainage.

2/ All averages are for less than 15 years of record in the 1938-52 period.

3/ Not included in watershed average.

ARIZONA SNOW SURVEYS - APRIL 1, 1956

DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENTS 1956 Date of Survey	Snow Depth (In.)	Water Content (In.)	PAST RECORD Water Content (In.) 1955	1954	1938-52 Average	Previous Yrs. of Record
WILLIAMS RIVER									
Iron Springs 2/	12-R-2	6200	3/30	0	0.0	0.0	0.0	0.0	10
Camp Wood 1/2/	12-R-1	5700	4/1	0	0.0	0.0	0.0	0.0	10
Willow Ranch 2/3/	13-P-1	5000	3/31	0	0.0	0.0	-	0.0	10
LOWER COLORADO RIVER									
Bright Angel 2/	12-N-1	8400	3/31	11	2.9	7.0	10.6	9.3	9
Grand Canyon 2/	11-P-1	7500	3/31	0	0.0	0.0	1.6	1.5	9
Fort Valley 2/	11-P-2	7350	3/30	0	0.0	0.0	2.1	1.9	9
Chalender 1/2/	12-P-1	7100	3/31	0	0.0	0.0	0.3	2.8	9
LITTLE COLORADO RIVER									
Ft. Apache 2/	9-R-5	9160	4/5	7	2.3	4.3	7.4	6.7	6
Baldy 2/	9-S-1	9125	4/5	0	0.0	0.0	5.1	4.9	6
Nutrioso	9-S-4	8500	3/30	0	0.0	0.3	0.0	0.6	18
Happy Jack 1/2/3/	11-R-5	7630	Report Delayed			0.0	2.4	3.4	4
Gentry 2/3/	10-R-5	7600	4/3	3	0.4	0.0	0.0	-	3
Heber 2/3/	10-R-4	7600	4/3	4	0.6	0.0	1.2	-	3
Canyon Creek 2/3/	10-R-3	7500	4/3	5	0.9	0.0	2.3	-	3
Mormon Mountain 2/	11-R-3	7500	4/4	T	T	0.0	6.0	11.1	4
Mormon Lake 2/	11-R-4	7350	4/4	0	0.0	0.0	3.9	8.4	9
Fort Valley 2/	11-P-2	7350	3/30	0	0.0	0.0	2.1	1.9	9
McNary 2/	9-R-2	7200	3/30	0	0.0	0.0	0.0	0.2	17
Forest Dale 2/	10-R-6	6430	3/30	0	0.0	0.0	0.0	0.0	17

1/ On adjacent drainage.

2/ Averages are for less than 15 years of record in the 1938-52 period.

3/ Not included in watershed average.

ARIZONA SNOW SURVEYS - DELAYED REPORTS RECEIVED SINCE LAST BULLETIN
(March 15, 1956)

DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENTS - 1956 Date of Survey	Snow Depth (Inches)	Water Content (Inches)
GILA RIVER					
Bear Wallow	10-T-1	8100	3/15	3	1.2
Coronado Trail	9-S-7	8000	3/14	1	0.2
Rose Canyon	10-T-2	7300	3/15	0	0.0

LIST OF SNOW SURVEYORS

SNOW COURSE	SURVEYOR
Baldy	SCS and SRVWU
Bear Wallow	J. R. Brinkley
Beaver Head	Jess Burke
Black Canyon	Robert M. White
Bright Angel	Hillis and Hillis
Camp Wood	Mrs. C. C. Merritt
Canyon Creek	SCS and SRVWU
Casner Park	SCS and SRVWU
Chalender	Oleson and Gossard
Coronado Trail	McAdams
Forest Dale	Robinson, Karty and Bread
Ft. Apache	SCS and SRVWU
Fort Valley	Rocky Mt. F. & R. Exp. Station
Frisco Divide	Weissenborn
Gaddes Canyon	Richard Enz and Ross Crittenden
Gentry	SCS and SRVWU
Grand Canyon	Lynch
Happy Jack	Emil Ryberg and Vance Keys
Heber	SCS and SRVWU
Inman	C. H. McCauley
Iron Springs	Ernest Saxby
McNary	Robinson, Karty and Bread
Maverick Fork	SCS and SRVWU
Milk Ranch	Robinson, Karty and Bread
Mingus Mountain	Richard Enz and Ross Crittenden
Mogollon	J. R. Wray
Mormon Lake	SCS and SRVWU
Mormon Mountain	SCS and SRVWU
Munds Park	SCS and SRVWU
Nutrioso	McAdams
Pacheta	Foch Phillips
Rose Canyon	J. R. Brinkley
State Line	Weissenborn
Taylor Creek	C. H. McCauley
Willow Ranch	Tiny Miller and LeRoy Tingstrom
Workman Creek	Rocky Mt. F. & R. Exp. Station

The following organizations cooperate in the Arizona snow survey work:

FEDERAL

Department of Agriculture

Soil Conservation Service

Forest Service
- Apache Forest
- Coconino Forest
- Coronado Forest
- Gila Forest
- Kaibab Forest
- Prescott Forest
- Rocky Mountain Forest and Range Experiment Station

Department of Commerce
- Weather Bureau
  - Arizona Section

Department of Interior

Bureau of Reclamation
- Region III

Geological Survey
- Arizona District

Bureau of Indian Affairs
- Fort Apache Reservation

National Park Service
- Grand Canyon National Park

Gila Water Commissioner, Safford, Arizona

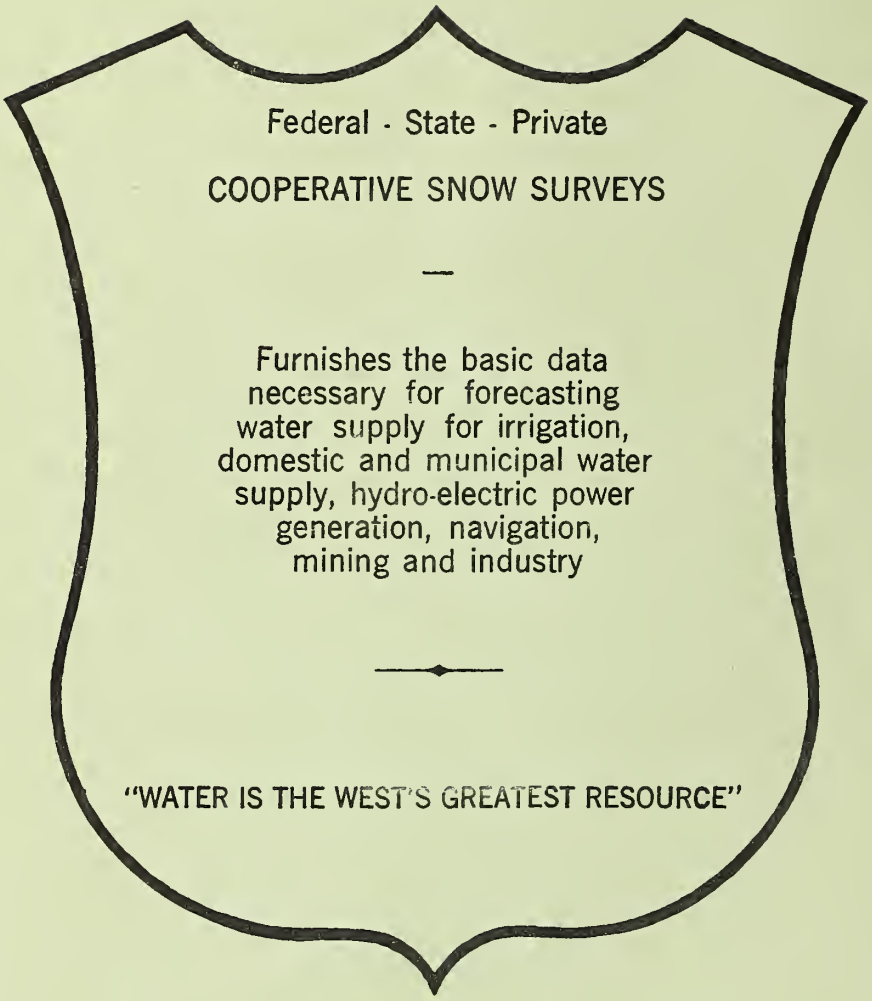
IRRIGATION PROJECTS

Salt River Valley Water Users' Association
Phoenix, Arizona

San Carlos Irrigation and Drainage District
Coolidge, Arizona

SOUTHWEST LUMBER MILLS, INC., McNary, Arizona

Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.


Federal - State - Private
COOPERATIVE SNOW SURVEYS
Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry
"WATER IS THE WEST'S GREATEST RESOURCE"